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(54) Title: APPARATUS AND METHODS FOR EVALUATING THE BARRIER PROPERTIES OF A MEMBRANE

(57) Abstract: The present invention teaches apparatus and methods for screening, in high throughput, the effect of test formulations on the barrier properties of a membrane, that are especially beneficial when skin is used as the test membrane. The apparatus and methods enable more efficient measurements of skin permeabilization, of the permeation of molecular or particulate entities through skin, and of the absorption and adsorption by skin of ingredients in fluid formulations, together with screening of exfoliation of material from the exterior of the stratum corneum. The apparatus provide for fluid contact to the skin from both donor and receptor sides, for measurements of skin electrical response in the presence of test formulations, of permeation and permeation enhancement, for the depth-profiling of test formulation constituents through the skin, of stratum corneum component disruption, and of loss of material from the stratum corneum. The invention thus provides simple, robust and scalable means of performing, preferably in high throughput, studies of transdermal drug delivery, transdermal delivery of proteins or DNA, and the development of personal care products, such as cosmetics, moisturizers and exfoliants.